REMARKS

Claims 1, 4, 5 and 23-25 are under examination. New claims 23-25 are drawn to preferred embodiments of the invention as claimed in claim 5. No new matter has been added. Reconsideration is requested.

Claims 1 and 4 stand rejected under 35 USC §112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the application was filed. It continues to be the Examiner's position that only SEQ ID NO:1 and sequences that encode an identical protein product meet the written description requirement. This rejection is respectfully traversed.

Applicants respectfully submit that claim 1 and claim 4, dependent therefrom, clearly meet the written description requirement. The scope of the amended claim includes only those nucleic acid sequences that are 98 or 99% identical to SEQ ID NO:1, or are complementary thereto, or encode an identical polypeptide product. It is respectfully submitted that the number of such sequences is finite, and that the description provided in the specification is sufficient that the included subject matter will be known to those of skill in the art. The Examiner has argued that nucleic acids encoding human and zebrafish Hepp proteins have significantly less than 98% identity to SEQ ID NO:1, and that therefore reliable information is not available about the structure of any gene within the genus. It is respectfully submitted that the fact that these related nucleic acids, while having similar structure and function, have less identical sequences, does not support the Examiner's contention, but

provides further evidence in favor of Applicants' position that a nucleic acid that is 98 or 99% identical will have similar structure and function. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1 and 4 also stand rejected under 35 USC §112, first paragraph, as containing subject matter that is not enabled. It is the Examiner's view that the claims are overly broad, and that only SEQ ID NO:1 and sequences that encode an identical protein product are enabled. This rejection is respectfully traversed.

It is respectfully submitted that the number of such sequences is finite, and that they can be made and used without undue experimentation by persons of skill in the art. As detailed above, such sequences would be expected by persons of skill in the art to have similar structure and function to SEQ ID NO:1, as the related human and zebrafish sequences have less identity than that which is presently claimed. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1, 4 and 5 have been rejected under 35 USC § 102(b) as being anticipated by Isomura. It is the Examiner's position that Isomura teaches a nucleic acid that is complementary to nucleotides 2058-2082 of SEQ ID NO:1. This rejection is traversed for the following reasons.

Sequence AP000070 by Isomura is a 100 kb long Homo sapiens genomic DNA sequence from chromosome 8p11.2. The examiner has found that a 25 bp long nucleotide sequence (nucleotides 66558 to 66534) from Isomura's sequence AP000070 is complementary to nucleotides 2058-2082 of SEQ ID NO:1 which represents mouse Hepp cDNA.

It is the Examiner's position that "[t]he claims can be interpreted to encompass fragments of DNA that are complementary to a portion of the nucleic acid set forth in SEQ ID NO:1." Applicants respectfully disagree. It is noted that the presently pending claims do not include fragments of SEQ ID NO:1, but only full length sequences that are at least 98% identical. Persons of skill in the art appreciate that a "complementary sequence" is one that is complementary to an entire sequence, and not merely a portion thereof. Further, the specification states, at page 4, paragraph 12:

> "The terms "complementary" or "complement thereof", as used herein, refer to sequences of polynucleotides which are capable of forming Watson & Crick base pairing with another specified polynucleotide throughout the entirety of the complementary region." (emphasis added)

Accordingly, the fact that a portion of Isomura's sequence may be complementary to a portion of the claimed sequence does not render the reference anticipatory. On this basis alone, reconsideration and withdrawal of the rejection are respectfully requested.

Furthermore, the results of the sequence search appended are poorly labeled, and it is difficult to ascertain what the query sequence was, what search engine was used, and what nucleic acid database was searched. It appears that the sequence for mouse Hepp cDNA was run against a human genomic DNA database.

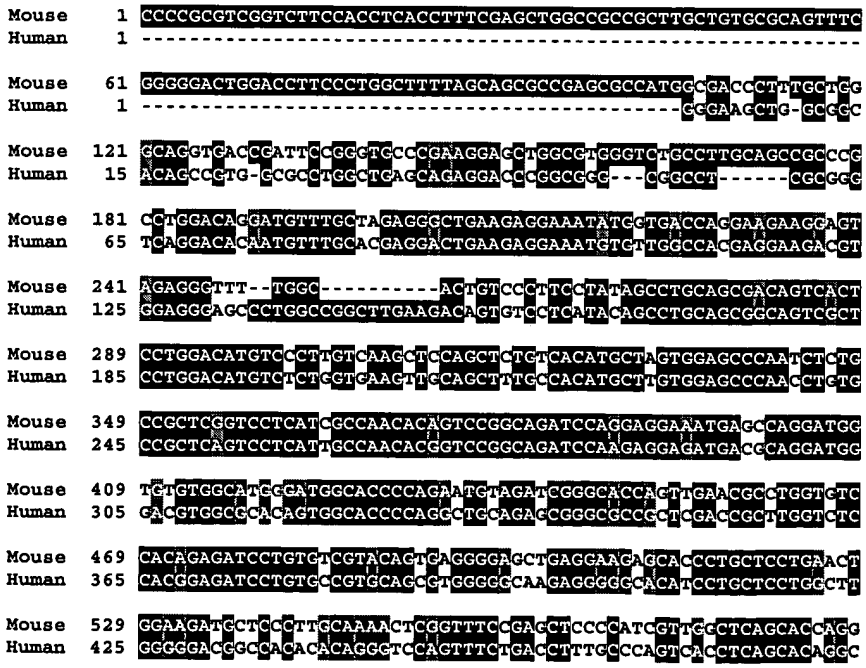
With respect to this comparison, Applicants respectfully submit the following:

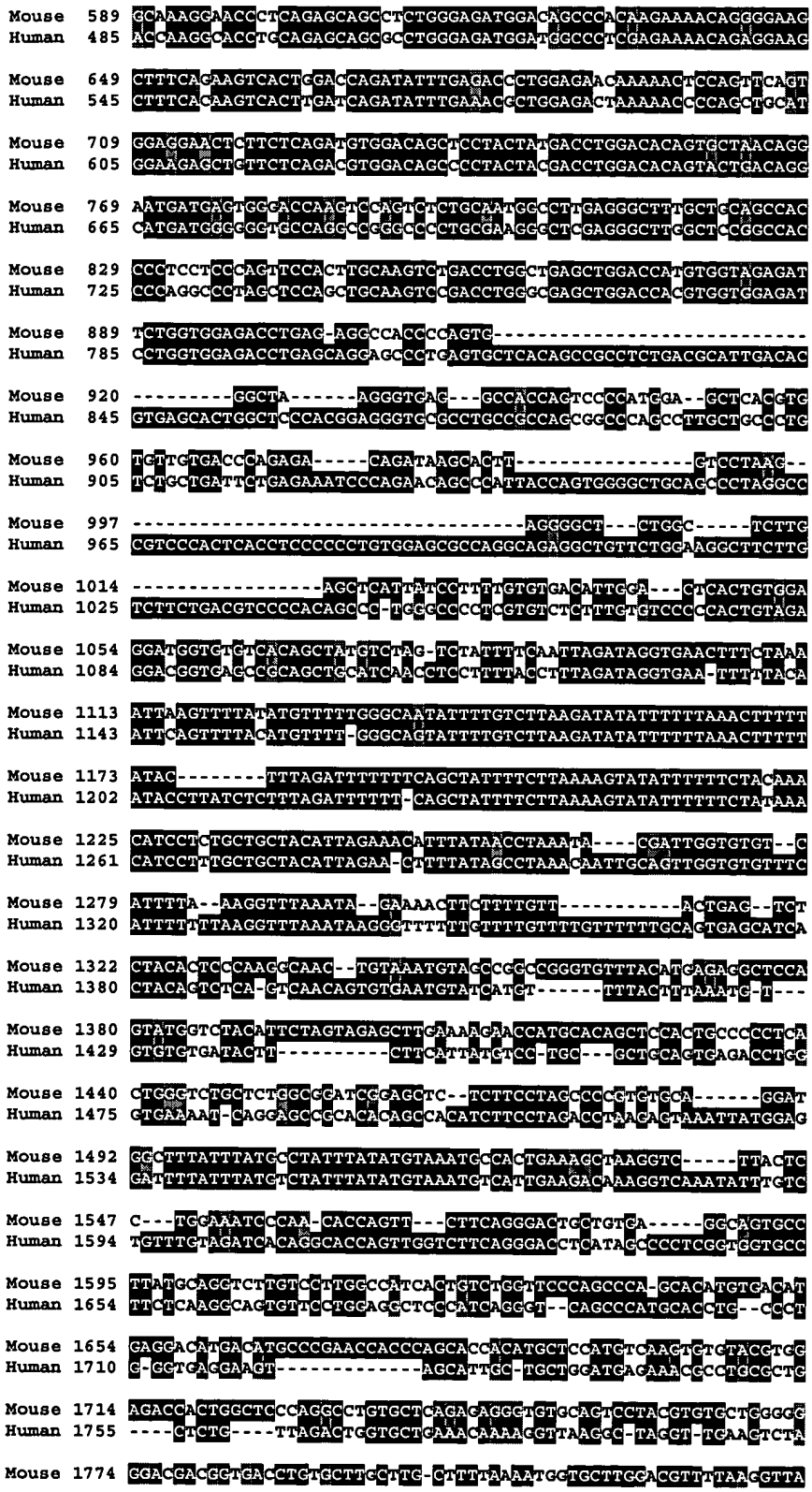
- Nucleic acid complementarity based on a stretch of 25 nucleotides and a score of 25 is meaningless in genetics.
- Nucleotides 2058-2082 from mouse Hepp cDNA represent part of the NON-CODING 3'UTR region, and contain part of the polyadenylation signal and poly-A sequence which

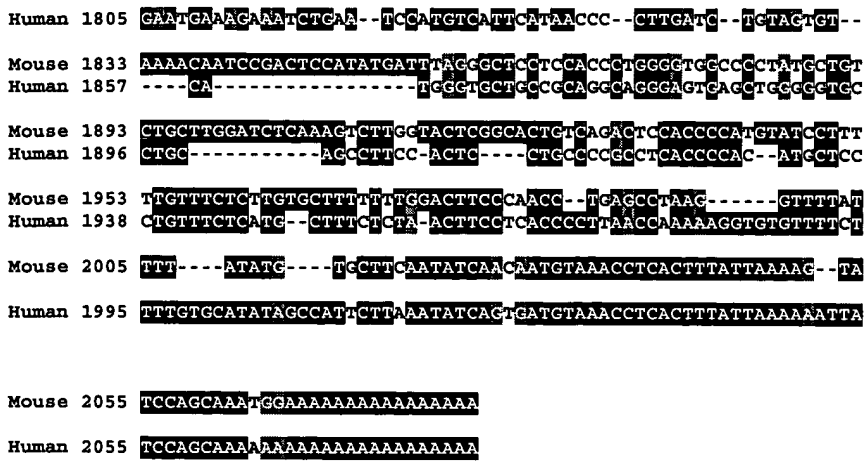
is present in almost all of the 40,000 or so genes known or predicted to exist in mammalian genomes.

- The comparison of mouse Hepp cDNA with the human genomic DNA in this case is not meaningful because the mouse and human Hepp cDNAs differ in the 3'UTR region including the polyadenylation signal that precedes the poly-A sequence (please see the sequence comparison below).
- Isomura's genomic DNA sequence originates from human chromosome 8, whereas human Hepp gene maps to chromosome 14 (please see UniGene Cluster Hs.34045). Furthermore, Isomura's sequence has no inferred or experimentally deduced hypothetical or other function, and does not have ANY similarity to mouse or human *Hepp* mRNA, cDNA or gene.

Clustal alignment of mouse and human cDNA




Mouse 589 GCAAAGGAACCCTCAGAGCAGCCTCTGGGAGATGGACAGCCCACAAGAAAACAGGGGAAG
Human 485 ACCAAGGCACCTGCAGAGCAGCGCCTGGGAGATGGATGGCCCTCGAGAAAACAGAGGAAG
Mouse 649 CTTTCAGAAGTCACTGGACCAGATATTTGAGACCTGGAGAACAAAAACTCCAGTTCAGT
Human 545 CTTTCACAAGTCACTTGATCAGATATTTGAAACCTGGAGACTAAAAACCCCAGCTGCAT
Mouse 709 GGAGGAACTCTTCTCAGATGTGGACAGGTCCTACTATGACCTGGACACAGTGCTAACAGG
Human 605 GGAAGAGCTGTTCTCAGACGTGGACAGCCCTACTACGACCTGGACACAGTACTGACAGG
Mouse 769 AATGATGAGTGGCACCAAGTCCAGTCTCTGCAATGGCCTTGAGGGCTTTGCTGCAGCCAC
Human 665 CATGATGGGGGGTGCCAGCCGGGCCCTGCGAAGGCTCGAGGGCTTGGCTCCGGCCAC
Mouse 829 CCCTCCTCCCAGTCCACTTGCAAGTCTGACCTGGCTGAGCTGGACCATGTGGTAGAGAT
Human 725 CCCAGGCCCTAGCTCCAGCTGCAAGTCCGACCTGGCGAGCTGGACCACGTGGTGGAGAT
Mouse 889 TCTGGTGGAGACCTGAG-AGCCCACCCCAGTG----------
Human 785 CCTGGTGGAGACCTGAGCAGGAGCCCTGAGTGCTCACAGCCGCCTCTGACGCATTGACAC
Mouse 920 ---------GGCTA------AGGGTGAG---GCCACCAGTCCCCATGGA--GCTCACGTG
Human 845 GTGAGCACTGGCTCCCACGGAGGGTGCGCCTGCCGCCAGCGGCCCAGCCTTGCTGCCCTG
Mouse 960 TGTTGTGACCCAGAGA-----CAGATAAGCACTT----------GTCCTAAG--
Human 905 TCTGCTGATTCTGAGAAATCCCAGAACAGCCCATTACCAGTGGGGCTGCAGCCCTAGGCC
Mouse 997 ----------AGGGGCT---CTGGC-----TCTTG
Human 965 CGTCCCACTCACCTCCCCCCTGTGGAGCGCCAGGCAGAGGCTGTTCTGGAAGGCTTCTTG
Mouse 1014 ----------AGCTCATTATCCTTTTGTGTGACATTGGA---CTCACTGTGGA
Human 1025 TCTTCTGACGTCCCCACAGCCG-TGGCCCCCTCGTGTCTGTTTGTGTCCCCCACTGTAGA
Mouse 1054 GGATGGTGTGTCACAGCTATGTCTAG-TCTATTTTCAATTAGATAGGTGAACTTTCTAAA
Human 1084 GGACGGTGAGCCGCAGCTGCATCAACCTCCTTTTACCTTTAGATAGGTGAA-TTTTTACA
Mouse 1113 ATTAAGTTTTATATGTTTTTGGGCAATATTTTGTCTTAAGATATATTTTTTAAACTTTTT
Human 1143 ATTCAGTTTTACATGTTTT-GGGCAGTATTTTGTCTTAAGATATATTTTTTAAACTTTTT
Mouse 1173 ATAC---------TTTAGATTTTTTTCAGCTATTTTCTTAAAAGTATATTTTTTCTACAAA
Human 1202 ATACCTTATCTCTTTAGATTTTTT-CAGCTATTTTCTTAAAAGTATATTTTTTCTATAAA
Mouse 1225 CATCCTCTGCTGCTACATTAGAAACATTTATAACCTAAATA----CGATTGGTGTGT--C
Human 1261 CATCCTTTGCTGCTACATTAGAA-CTTTTATAGCCTAAACAATTGCAGTTGGTGTGTTTC
Mouse 1279 ATTTTA--AAGGTTTAAATA--GAAAACTTCTTTTGTT----------ACTGAG--TCT
Human 1320 ATTTTTTTAAGGTTTAAATAAGGCTTTTTTGTTTTGTTTTGTTTTTTGCAGTGAGCATCA
Mouse 1322 CTACACTCCCAAGCAAC--TGTAAATGTAGCCCGCCGGGTGTTTACATGAGAGGCTCCA
Human 1380 CTACAGTCTCA-GTCAACAGTGTGAATGTATCATGT------TTTACTTTAAATG-T---
Mouse 1380 GTATGGTCTACATTCTAGTAGAGCTTCAAAAGAACCATGCACAGCTCCACTGCCCCCTCA
Human 1429 GTGTCTGATACTT----------CTTCATTATGTCC-TGC---GCTCCAGTGAGACCTGG
Mouse 1440 CTGGCTCTGCTCTGGCGGATCGGAGCTC--TCTTCCTAGCCCCGTGTGCA------GGAT
Human 1475 GTGAAAAT-CAGGAGCCGCACACAGCCACATCTTCCTACACCTAACACTAAATTATGGAG
Mouse 1492 GGCTTTATTTATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTC-----TTACTC
Human 1534 GATTTTATTTATGTCTATTTATATGTAAATGTCATTGAAGACAAAGGTCAAATATTTGTC
Mouse 1547 C---TGGAAATCCCAA-CACCAGTT---CTTCAGGGACTCCTGTGA-----GGCAGTGCC
Human 1594 TGTTTGTAGATCACAGGCACCAGTTGGTCTTCAGGGACCTCATAGCCCCTCGGTGGTGCC
Mouse 1595 TTATGCAGGTCTTGTCCTTGGCCATCACTGTCTGGTTCCCAGCCCA-GCACATGTGACAT
Human 1654 TTCTCAAGGCAGTGTTCCTGGAGGCTCCCATCAGGGT--CAGCCCATGCACCTG--CCCT
Mouse 1654 GAGCACATGACATGCCCGAACCACCCAGCACCACATGCTCCATGTCAAGTGTGTACGTGG
Human 1710 G-GGTGAGGAAGT----------AGCATTGC-TGCTGGATGACAAACGCCTGCGCTG
Mouse 1714 AGACCACTGGCTCCCAGGCCTGTGCTCAGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGG
Human 1755 ----CTCTG----TTAGACTGGTGCTGAAACAAAAGGTTAAGGC-TAGGT-TGAAGTCTA
Mouse 1774 GGACGACGGTGACCTGTGCTTGCTTC-CTTTTAAATGGTGCTTGCACGTTTTAAGGTTA



For all of the above reasons, it is respectfully submitted that claims 1, 4 and 5 are not anticipated by Isomura. Reconsideration and withdrawal of the rejection are respectfully requested.

All objections and rejections having been addressed, it is respectfully submitted that this application is in condition for allowance, and Notice to that effect is respectfully requested. If any issues remain in the application that might be resolved by a telephone discussion, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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